



## PATENT ABSTRACTS OF JAPAN

(11) Publication number: **2000091696 A**(43) Date of publication of application: **31.03.00**

(51) Int. Cl

**H01S 5/22**(21) Application number: **10260212**(22) Date of filing: **14.09.98**(71) Applicant: **SANYO ELECTRIC CO LTD**(72) Inventor: **HAYASHI NOBUHIKO  
OTA KIYOSHI**(54) **SEMICONDUCTOR ELEMENT,  
SEMICONDUCTOR LIGHT-EMITTING ELEMENT  
AND MANUFACTURE THEREOF**

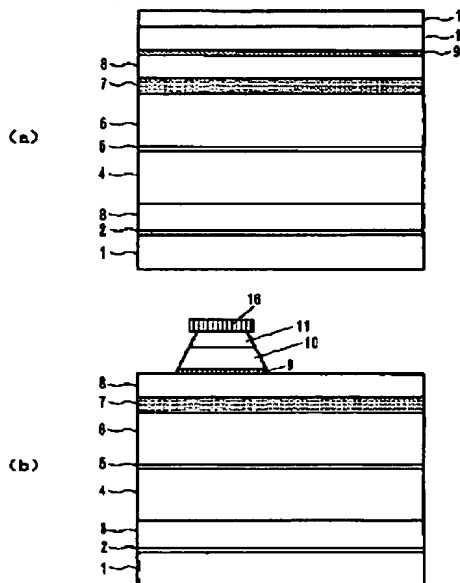
surface of a semiconductor wafer of the area in which the opaque p-low-temperature growth layer 9 is removed turns into transparent.

(57) Abstract:

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**PROBLEM TO BE SOLVED:** To provide a method for manufacturing a semiconductor element and a semiconductor light-emitting element of high reproducibility which control the depth of etching with high accuracy.

**SOLUTION:** On a sapphire substrate 1, a transparent n-AlGaIn first clad layer 6, a transparent MQW light-emitting layer 7 and a transparent p-AlGaIn second clad layer 8 are continuously grown, and an opaque low-temperature growth layer 9 consisting of p-InGaIn whose substrate temperature is 600-750°C is grown further thereon. Further, a transparent p-AlGaIn third clad layer 10 and a p-GaN contact layer 11 are grown in this order. Then, an Ni mask 16 is formed in a stripe area on the p-contact layer 11, and a part of the area from the p-contact layer 11 to the p-low temperature growth layer 9 is removed by etching in an RIE method, so that the opaque



DOCKET NO: P2001, 0678  
SERIAL NO: \_\_\_\_\_  
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